



The Effect of Customer Satisfaction on Use Continuance in Bank Chatbot Service

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Abstract:

Chatbots are text-based conversational agents that use Natural Language Processing to converse with customers. Chatbot has revolutionized the service industry by providing a customer-centric environment and a cost-effective business pattern to service providers. This technology is still maturing and has already influenced a lot of businesses due to its effective human-like interaction in different sectors. The banking industry too has adopted this very well. However, the acceptance level of this service is relatively slow among banking customers when compared to other sectors. This study focuses on the role of customer satisfaction factors that influence the use continuance of Chatbot services in the banking sector. A quantitative research design, using a purposive sampling method with a sample size of 422 respondents was considered. The data was analysed using SPSS and JMP. The results gave some new perspectives that will help the service providers to identify the antecedents that influence the use continuance of Chatbot service.

1. Introduction

Artificial intelligence (AI) has positively impacted the patterns of business and the lives of customers [1]. AI has penetrated all domains across the globe. It has specifically transformed the way consumers and financial institutions interact with each other [2]. Technologies such as wireless communications, digital twins, Chatbots, and wearables are transforming the ways the works are executed [3]. Most of the countries have a sizeable budget allocated for research in AI. It is considered to be the future. There are a lot of expectations from this technology because AI has tremendously reduced the tougher tasks by easier solutions, and undoable things are being achieved through AI [4]. AI-based technology is on the rise leading to drastic changes as more and more businesses have started implementing it. AI-based applications have improved personal relationships with customers by providing personalized and customized services. It

has also increased confidence in online transactions by detecting and preventing fraud while facilitating time and cost-saving solutions [5]. Applications of AI are seen in the scientific applications, business, medical, pharma industries, and education to name a few. AI has opened new avenues and business opportunities by cutting costs in their expenditure, and at the same time, building good customer relationships. There is a paradigm shift in the banking industry. Being one of the earlier adopters of AI, a lot of customer-related grievances were sorted out. Banking sectors were able to crack down on a few problems that were bringing down the satisfaction level of their customers. One of the apprehensions of the bank customers is long queue time, delay in addressing their queries, and availability of their service in the comfort of the customers. Through Chatbot, this problem was addressed to a larger extent. The implementation of AI-based Chatbot technology is considered one of the influential developments in the financial sector

[6]. Chatbot is a subset of AI. It is also called a chatting robot or a computer software program that uses the techniques of AI like Natural Language Processing to achieve the given tasks. It can mimic spoken language or text of human conversation [7]. When customers type their queries, Chatbots answer the queries in a language that are easily understood [8]. Because of this most businesses are either planning to implement Chatbots or have incorporated this technology [9]. Chatbots have established a strong foothold in the banking service as they can answer routine queries successfully [10]. Chatbots are programmed in such a way that when bots are not able to answer the queries then it is immediately transferred to a human agent maintaining the continuity of the call [11].

Chatbots that communicate with users are systems based on AI that perform the given tasks through text or voice-based interfaces [12]. It is seen that customer satisfaction has a major role in the success and sustainability of any business it may be in the production or the service sectors. By addressing the needs and requirements of the customer, businesses can have a good competitive advantage. Attending to customers' grievances and satisfying them is a long-debated topic in marketing and consumer behavior [13]. The importance of satisfying customers is considered as a top priority not only in the brick-and-mortar mode but also in the virtual mode. Technology is showing its presence in almost all arenas of today's life. User satisfaction with the technology is also important [14] because it will reflect their choice of continuing to use the service in the long run [15]. Significant research work and related literature are available on the digitalization of the banking industry. The application of Chatbot technology is growing in the banking industry swiftly, yet it lacks in its use continuance. One of the reasons is that the Chatbot technology by itself has not attained its fullest capabilities to converse with human beings like a human being. Though customers can highly benefit from this technology some missing elements are causing dissatisfaction or low satisfaction among the customers, which is influencing them not to continue with this service. The technology behind the Chatbot is beyond the scope of this research work. However, it only aims to understand the management and psychological principles that must be considered by a Chatbot to make it behave more like a human. It attempts to answer the research questions; Why customers are hesitant to continue using Chatbots? What are the antecedents of customer satisfaction with the Chatbot and its use continuance? Research works indicate that customer satisfaction is one of the key determinants of use continuance [16]. This research

work aims to study the effect of customer satisfaction on use continuance concerning the Chatbot service in banking services and hence help the banking sectors to redesign or rethink the design of Chatbots.

2. Literature Review

2.1 AI and Chatbots

The inception of AI is dated back to 1966. AI is a computer program that has been designed to think intelligently and perform tasks like human beings. It is designed to portray the same psychology and intelligence as it is in humans. It is capable of reading and analysing volumes of data in different formats in very little time beyond human capabilities [17]. Companies have recognized and realized the capability of AI to collect, analyze, even learn and make corrections to its learnings. One of the key uses of AI is to know the behavioural patterns and preferences of customers [18]. Chatbots are also known as Artificial conversational entity [19].

Services for customers are being taken over by machines in the form of conversational user interfaces or Chatbots. These conversations are so human-like that it would not be that easy to distinguish between machine and human conversations [20]. Chatbots are just computer program that imitates the conversation of human beings in the form of text and speech. Chatbots are changing the service industry [21]. Chatbots provide 24/7 services in sales, support, and marketing, a large percentage of Chatbot services are being deployed. According to a survey, 41% of today's sales, 37% of marketing and 26% of post-sales queries are handled by Chatbot interaction (Forbes, 2019a). These software programs are also called virtual agents, software agents, conversational agents, interface agents to name a few. Chatbots are used for different purposes. Bots differ for B2B, and B2C [22]. Chatbots interact with humans through voice-based or text-based [23]. Customers interact with Chatbots to avail products or service-related information [24]. These applications benefit both the customers and the companies, because of their availability, user-friendliness, and reduced cost [25]. Chatbots are broadly classified into two types, Social Chatbots and Task-oriented Chatbots. Task-oriented Chatbots are further divided into 2 types. A generalized task-oriented type of Chatbot is designed to answer questions regarding small conversations that can be used to set the alarm clock, give a phone call, etc. Specific tasks require domain knowledge to carry out tasks like booking a flight or a train ticket, taking an appointment online ordering food online. Social Chatbots are mainly used in the psychological treatment of patients that involves a

small chitchat conversation [26]. The principle of Chatbots is the same for any service they use Natural Language Processing to converse. It is predicted that the market size of Chatbots will reach above 102.29 billion dollars USD by 2025 [27]. The usage of Chatbot agents in the banking industry will go up to 95% without the interference of human agents [28].

2.2 AI Technology in Banks

AI is a field of science that studies matter related to information and communication technology that mimics human complex abilities like reasoning, learning, and self-corrections to solve problems [29]. AI is an intelligent robot that can imitate human behavior [1]. AI is the combination of machine learning and natural language; this technology is used in present businesses like the banking industry. Machine learning is a process of analyzing the data and building the analytical model automatically. It is seen when there is a change in the algorithm and parameters when new data is added without the intervention of humans to reprogram them. Natural language processing is the ability to convert the natural spoken language or written that prompts the computer activity. AI uses complex algorithms to communicate and make decisions independently [30]. AI is proven to be efficient and better compared to human agents [31]. The rise of AI has begun the journey of automation and it will soon replace humans. The adoption of AI in banks was early when compared to other industries due to the high dependency on human resources in their activities. Today customers want more information on products and services and AI is allowing these companies to have this fulfilled by being available around the clock for their customers at any time anywhere. It has given opportunities for the companies to have direct interaction with the customers leading to strengthening their customer relationships [38]. The system provides recommendations based on customer requirements [32]. Investment in AI in the banking industry is worth it as it increases the satisfaction of the customers and that helps the customers to be loyal to the bank. The conversational interface answers the routine queries asked by the customers. Some of the banks that are benefiting from this technology are HDFC, ICICI, AXIS, and SIB.

2.3 Chatbots in Banks

A bank Chatbot examines users' queries and understands the needs of the customers and based on that it accomplishes its task. It uses AI algorithms to answer bank-related questions about loans, policies, nearby ATMs, or branches related to banks. At present banks have chat applications only to answer bank-related queries. The inbuilt AI system analyses

the query asked by the user and provides suitable answers. Chatbots can assist customers in managing their financial transactions, handling their refunds, making transactions, and reporting lost cards [33]. It is predicted that the Chatbot market will increase by 29.7% annually from 2.6 USD billion in 2019 to 9.4 USD billion in 2025 (Business Insider 2020) It will boost the service industry to 31.6% from 2019 to 2026. Chatbots are known not only for conversing immediately with customers through websites, and apps [34] but also provide customized language mimicking human speech to improve experience and loyalty [44]. It is forecasted that 85% of customer service jobs will be handled by Chatbots [35].

3. Hypothesis Development

Based on previous research work in marketing, information technology, and empirical studies. This article analyses the significant impact of satisfaction on customer loyalty and the use continuance of Chatbot services by customers in banking industries. A conceptual model and its each construct along with the hypothesis developed have been discussed in the following sections. With the advancement of digital technology, retaining customers and attracting new customers in the financial arena is considered to be more expensive when compared to brick-and-mortar banks [36]. When the market is bombarded with many services and products businesses are coming up with different strategies to attract new customers and show their loyalty towards the new providers. In such a situation, it becomes important that the service providers come up with knowledge of their customers to know what the challenges their customers are facing and how to withhold their customers and make them continue to use their service. One of the major challenges in management today is how to develop the loyalty of the customers toward their service [37]. Satisfaction is an important factor to be considered for loyalty while using banking Chatbots for services [38-42]. Customer loyalty is a commitment to reuse or patronize a service or a product deeply [16]. Satisfaction of the customer leads to customer loyalty [43]. When a customer is satisfied with the service of the bank such as addressing their needs and solving their queries the loyalty towards the bank improves [44]. Many theories like learning theory and the theory of cognitive dissonance have proved that the outcome of customer satisfaction is [45]. Research has shown that loyalty is an important antecedent of satisfaction [46]. Research suggests that satisfied customers have a positive relationship with loyalty. A highly satisfied customer shows a high level of loyalty when compared to an unsatisfied customer [47]. Based on this it can be postulated as :

H1. Customer satisfaction has a positive impact on customer loyalty.

Loyalty is a behaviour where the customer develops commitment towards the service provider, as a result of the trust gained by the service provider. Studies have shown that customers using online services are likely to give their personal information for personalized services. Research indicates loyalty is an indicator of use continuance.

H2. Customer loyalty has a positive impact on use continuance

Customer satisfaction is one of the core determinants in the marketing literature [48] Satisfaction is considered to be the key antecedent for success in the virtual environment [39]. Customer satisfaction is the evaluation expected service with the performance of the service provided [40]. When the customer enjoys the services based on his expectations and predictable calculations, he gets satisfied and shows his satisfaction by showing positive emotional behaviours like talking about the services he is enjoying, the benefits he is having, revisiting or repurchasing, and use continuance.

4. Research Methodology

For this study, the questionnaire items of the constructs were adapted from the relevant existing literature. The questionnaire items were modified to fit the context of this study. The following steps were taken to enhance the quality of the measurement items. Initially, the items were modified based on the inputs from the bank managers then a pre-test was carried out. The questionnaire was validated to check the validity of each item. It was carried out in three phases. Four experts from the academic field, two industrial experts (bank managers) and two English language experts checked whether each measurement adequately covered the entire construct to be covered. Based on their feedback the items were checked for content validity, and the questionnaire was refined. The questionnaire was designed to investigate the proposed hypothesis. The 5-point Likert scale was used for each item having a measuring scale of 1 for strongly disagree to 5 for strongly agree. A pilot study with 100 respondents was administered to check for validation. The targeted sample for this study are the bank customers who have experienced bank Chatbots for their banking purposes. Data was collected by distributing the questionnaire through physical paper mode and Google Form. To ensure that the survey participants were actual bank Chatbot service users, two screening questions were asked to follow inclusion and exclusion criteria. In the pilot study the Cronbach Alpha, Normality, and Reliability were

checked using SPSS and the range was falling above 8.5 which indicated that the value was good and could be proceeded for further analysis on a large number. The questionnaire was shared with approximately 500 bank customers who have used the Chatbot services for their banking needs. Participants were requested to share the questionnaire with their network thus convenience sampling and snowball sampling methods were used together. 460 responses were received from the respondents giving a response rate of 92% of which 38 were either incomplete or not valid. Such responses were removed from the analysis. A final total of 422 valid responses were used for the analysis.

5. Data Analysis and Interpretation

The convenience and snowball sampling techniques were adopted to collect data. Data analysis is a technique the researcher uses to streamline, structure, and give meaning to the information that is collected. The collected data was coded in SPSS software to check for reliability. To data was further analysed to study the Frequency, Mean, Standard Deviation, Inferential Statistics, and Multiple Regression. Cronbach alpha was checked to know the internal consistency of the existing scale and it was seen to be more than 0.8, thus it was considered reliable for further analysis. The Eigen Value, Variance%, AVE and Composite Reliability are listed in Table 1.

5.1 Factor Analysis

Factor analysis is a statistical method that allows the researcher to analyze the interrelationship between variables. It is a data reduction technique. It reduces a large number of factors into a smaller number of factors. The factor analysis result is examined by first checking the appropriateness of the data using the KMO and Bartlett test for Sphericity checking the strength of the relationship among the variables. The results of these tests are listed in Table 2. KMO measures the adequacy of the sample. If the value is greater than 0.55 [41] then the sample size is adequate. The Bartlett Sphericity test measures the correlation among the variables and the significance value ($p < 0.05$) shows that the matrix is good for factor analysis. The result of KMO shows a value of 0.844, 0.700, 0.776 which is greater than 0.55 and significance less than ($p < 0.005$) i.e. it is significant. The KMO and Bartlett test shows that the data is appropriate for factor analysis.

5.2. Reliability Analysis

Reliability is another important test that is used to measure the reliability of the scale item. Reliability test measures the measuring instruments are free

from errors. Cronbach Alpha is used to measure reliability, Cronbach Alpha value of all the variables was found to be 0.870, which exceeded the criteria of 0.70 [42]. A value between 0.60 to 0.70 is recommended as accepted. The results of these tests are listed in Table 3 where it was found that Cronbach alpha for each scale item was found to be within the range and it was above 0.7, which is acceptable for reliability. Using SPSS descriptive analysis was conducted on all variables to check for missing data. After checking for missing data, a multivariate analysis was carried out to check the data was normally distributed. A normality test is carried out to check the variables are normally distributed. In statistics, normality is used to describe a symmetric bell-shaped curve where major frequency scores will be in the middle and the extreme sections will have a smaller frequency. This is determined by Skewness and Kurtosis. Skewness shows the distribution of the data, Kurtosis tells the flatness of the data. The acceptable range for kurtosis is between -1.5 and +1.5 and skewness is between -3 and +3. The value of the data set is lying within the range it is considered that data is normally distributed.

5.3. Correlation

The correlation matrix, that is displayed in Table 4, was carried out to determine the relationship between the variables of the sample. Correlation matrix analysis gives the strength and direction of the relationship among the variables. The correlations were significant at the significance level of 0.01. The correlation between customer satisfaction and loyalty was found to be moderately positively significant ($r=0.527, p<0.01$). Hence H1 was supported. This shows that an increase in customer satisfaction in using Chatbot services in banks would lead to an increase in loyalty in using Chatbot bank services. The correlation between customer satisfaction and use continuance was found to be positively significant ($r=0.693, p<0.01$). Hence H2 was supported. This shows that an increase in customer satisfaction with using Chatbot services in banks would lead to an increase in the continuation of using Chatbot bank services. The correlation between loyalty and use continuance was found to be significant ($r=0.320, p<0.01$). Hence H3 was supported. This shows that loyalty in using Chatbot services in banks would lead to use continuance of Chatbot bank services.

5.4. Regression Analysis

Multiple regression analysis is a technique that measures the effect of two or more independent variables. In this research, this technique was used to determine the impact of customer satisfaction and

loyalty on use continuance. A linear regression test was also conducted using SPSS. The values listed in Table 5 supports the relationship of H1, H2 and H3, where loyalty acts as a mediator. The relationship between customer satisfaction on use continuance shows positive significance where an R value of 0.693 shows a strong relationship between the independent and dependent variables. The R square value 0.481 indicates that loyalty had a significant positive effect on customer satisfaction and use continuance. Thus, accepting H2 & H3.

5.5. Discussions and implications

In the present highly competitive world, it is seen that banks have to strive hard to increase their customer base and improve the customer journey by increasing the satisfaction level of the bank customers. Customer satisfaction with Chatbots plays a significant role in making customers continue their use of Chatbot services in the banks. Banks will be more successful if they concentrate on retaining and maintaining long-lasting relationships with the customers as it costs more effort to retain the customers than to acquire a new customer. This service is extensively in use by many banks. This study suggests the following findings. Chatbot is performing very well as it is known to perform in a more effective way than human beings with very limited errors and it is very productive and time-saving both for the customers and the banks. Banks can work on upgrading their services and products to enhance satisfaction levels which will affect customer loyalty towards the bank. Higher satisfaction levels through a user-friendly environment and productive services to the customer in the services will be more and this will encourage the customers to continue the use of Chatbot services. This study highlights that customer satisfaction and loyalty are the crucial aspects that impact Use Continuance of Chatbot services in the banking industry. It is seen from the study that customer satisfaction and the loyalty of bank customers will have a great impact on continuing to use Chatbot services in banks. Furthermore, the study reveals that customer satisfaction has a positive effect on use continuance. This implies that when formulating strategies for improving use continuance, banks must take into consideration that customer satisfaction with technology-based services like Chatbot services of bank consumers will make bank customers continue to use Chatbot services. It is necessary to include other components to reinforce this relationship further. It was found from the study that customer satisfaction is the initial step for formulating the use continuance of Chatbot services.

Table 1. Validity Test of variables

Item Code	Item Statement	Factor loading	Eigenvalue	Variance %	AVE	Composite Reliability
Customer-Satisfaction (CSA)						
CSA 1	The bank Chatbot has met my expectations by fetching the requested bank-related information within seconds	.630	3.177	63.536	0.514	0.838
CSA 2	The bank Chatbot is very efficient in understanding my banking queries on seeking information, bank transaction	.813				
CSA 3	The bank Chatbot supported me very well during my interaction	.796				
CSA 4	The bank Chatbot was very cordial while giving information	.804				
CSA 5	I am very impressed by the details the bank Chatbot gave on bank services.	.690				
Customer-Loyalty (CLO)						
CLO 1	I will speak good about the information the bank Chatbot gave.	.757	2.835	56.690	0.549	0.857
CLO 2	I will share my good experience of the bank Chatbot concerning the ease at which I was able to do my transactions, apply loans, opening of RD, FD	.557				
CLO 3	I will share my testimonials on the ability of the bank Chatbot that gives accurate information on banking services	.743				
CLO 4	I will continue to use this bank Chatbot	.812				
CLO 5	I prefer to use this bank Chatbot for queries than going physically to the bank.	.806				
Use_Contiuanance (UCO)						
	I would continue to use the bank Chatbot for knowing answers	.591	2.557	63.932	0.529	0.816
	I would use the bank Chatbot at all times to know more about the services	.781				
	I would suggest others, use bank Chatbots to learn more about various bank products	.773				
	I would use the bank Chatbot at all times to know more about various schemes.	.748				

Table 2. KMO & Bartlett's Test

KMO and Bartlett' Test		CSA	LOY	UCO
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.844	.700	.776
Bartlett's Test of Sphericity	Approx. Chi-Square	969.672	790.322	562.589
	df	10	10	6
	Sig.	.000	.000	0.000

Table 3. Reliability of variables

Constructs	No. of Scale items	Cronbach's alpha
Customer Satisfaction (CSA)	5	0.855
Customer Loyalty (CLO)	5	0.805
Use-Continuance (UCO)	4	0.811

Table 4. Correlation of variables

	Loyalty	Satisfaction	Use Continuance
Loyalty	1		
Satisfaction	.229**	1	
Use Continuance	.320**	.693**	1

Table 5. Hypothesis Testing

Hypothesis	Independent Variable	Dependent Variable	R	R Square	Adjusted R Square	Beta	Sig.
H1	CUS	UCO	.693	.481	.480	.693	.000
H2	CUS	LOY	.229	.052	.050	.229	.000
H3	LOY	UCO	.320	.102	.100	.320	.000

Bank customers using Chatbot services would continue to use the service based on their level of satisfaction. A satisfied consumer will be loyal to the service which in turn will lead to use continuance of the service. For banks to achieve high levels of use continuance among bank consumers, banks are advised to look into aspects like customer satisfaction and loyalty. Banks are encouraged to improve customer satisfaction by improving their Chatbot services by giving them a user-friendly environment, easy-to-use services, and error-free services that provide them with services exceeding their expectations. Banks should ensure they provide

services that keep the Chatbot consumers more loyal.

6. Limitations and future research

This research study was to study the impact of customer satisfaction, and loyalty on use continuance. This study reveals that customer satisfaction and loyalty have a positive impact on use continuance. Banks that satisfy their customers by giving them a good service by using upgraded technology like artificial intelligence can increase the satisfaction level leading to use continuance. Some of the limitations of this study are, this study

analyzed only by the customers of Bangalore. Future research can be extended to other states of India. This research model was analyzed for bank customers, it can be further extended and checked for other industries also. During this study there was a vast difference between the private and public sector banks and the use of technology in these banks, future studies can be carried out by comparing these banks and their customers using and continuing the technology.

7. Conclusion

The banking sector has seen a lot of changes in this digital era by providing a lot of practical tools to ensure safety and comfort. As technology improves it is better to adopt those technologies into the process making the process easy and comfortable for both banks and customers bringing in a win-win situation for both.

Author Statements:

- **Ethical approval:** The conducted research is not related to either human or animal use.
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